LOW POWER AND LOW OFFSET VOLTAGE SUPER SMALL-SIZED SINGLE C-MOS COMPARATOR

■GENERAL DESCRIPTION

The **NJU7108** is a super small-sized package single C-MOS comparator with push pull output.

The operating voltage is from 1V to 5.5V, and the interface can be connected with most of TTL and C-MOS type standard logic ICs.

Furthermore, The input offset voltage is lower than 4mV and Low operating current 10μA, therefore they can be suitable for battery use items and other portable items.

The available package is not only SC88A, but also ultra small package TSON6.

■PACKAGE INFORMATION

NJU7108F3
(SC88A)

NJU7108KL1
(TSON6)

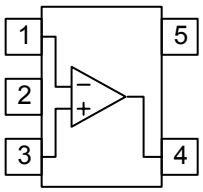
■FEATURES

●Single Low Power Supply	V_{DD}=1.0~5.5V
●Low Offset Voltage	V_{IO}=4mV max
●Low Operating Current	I_{DD}=10uA typ
●Push Pull Output	
●Package Outline	SC88A, TSON6
●C-MOS Technology	

■PIN CONFIGURATION

NJU7108F3

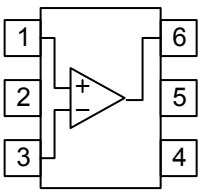
(Top View)



NJU7108F3
PIN CONFIGURATION
1. -INPUT
2. V_{SS}
3. +INPUT
4. OUTPUT
5. V_{DD}

NJU7108KL1

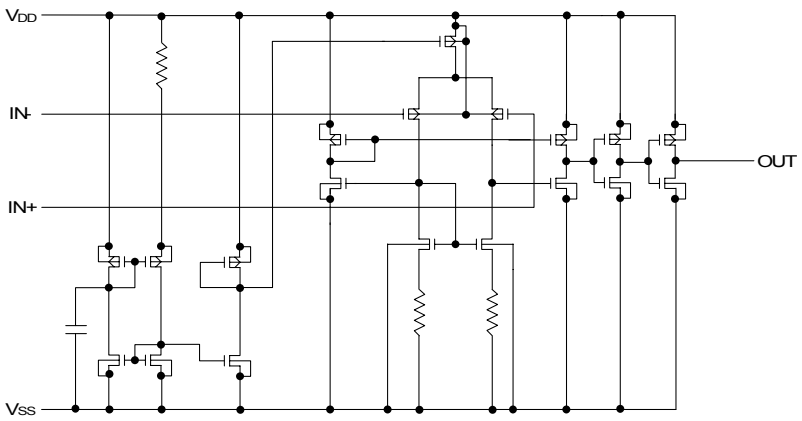
(Top View)



NJU7108KL1
PIN CONFIGURATION
1. +INPUT
2. V_{SS}
3. -INPUT
4. V_{DD}
5. V_{SS}
6. OUTPUT

(CAUTION) There is not pin-compatible with NJU7108F3 and NJU7108KL1.

■EQUIVALENT CIRCUIT



■ABSOLUTE MAXIMUM RATINGS

(Ta=25ºC)

PARAMETER	SYMBOL	RATING	UNIT
Supply Voltage	V_{DD}	7.0	V
Differential Input Voltage	V_{ID}	±7.0	V
Common Mode Input Voltage	V_{IC}	-0.3~7.0 (Note1)	V
Power Dissipation	P_D	SC88A : 250 (Note2) TSON6 : 515 (Note3)	mW
Operating Temperature	Topr	-40~+85	ºC
Storage Temperature	Tstg	-55~+125	ºC

(Note1) For supply voltage less than +7.0V, the absolute maximum input voltage is equal to supply voltage.
(Note2) Mounted on aglass epoxy board (FR-4) in size of 50x50x1.6mm.
(Note3) Mounted on Two layer board(40x40x1.6mm, single layer, both-side 50% share of the wiring substrate).
(Note4) Decoupling capacitor should be connected between V_{DD} and V_{SS} due to the stabilized operation for the circuit.

■ELECTRICAL CHARACTERISTICS

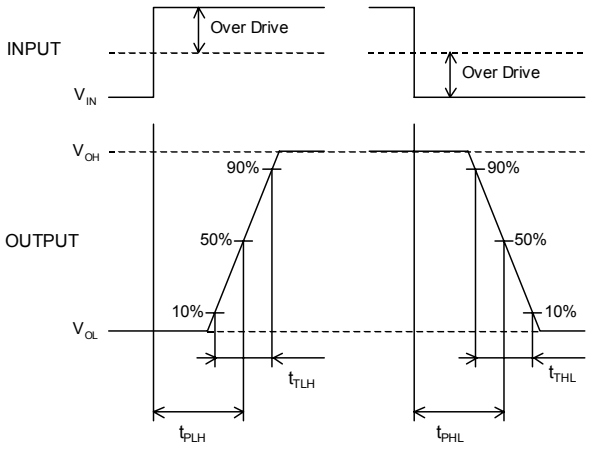
(V_{DD}=3.0V,R_L=∞,Ta=25ºC)

PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNIT
Operating Voltage	V_{DD}		1.0	-	5.5	V
Input Offset Voltage	V_{IO}	V_{IN}=V_{DD}/2	-	-	4	mV
Input Offset Current	I_{IO}		-	1	-	pA
Input Bias Current	I_{IB}		-	1	-	pA
Input Common Mode Voltage Range	V_{ICM}		0~2.5	-	-	V
High Level Output Voltage	V_{OH}	I_{OH}=-5mA	2.7	-	-	V
Low Level Output Voltage	V_{OL}	I_{OL}=+5mA	-	-	0.3	V
Supply Current	I_{DD}		-	10	20	uA

(V_{DD}=3.0V,f=19kHz,C_L=15pF,Ta=25ºC)

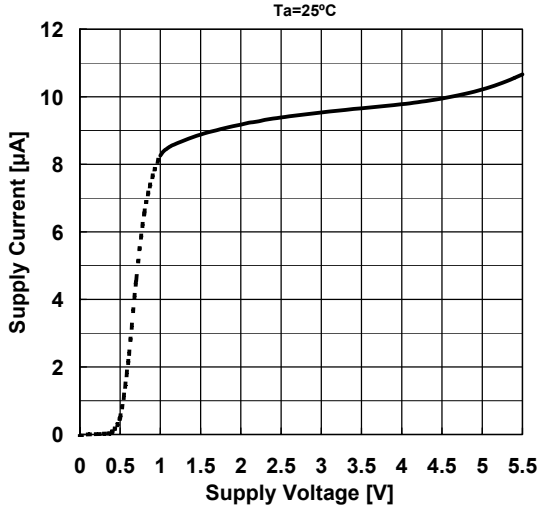
PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNIT
Propagation Delay Low to High	t_{PLH}	Over Drive=100mV	-	500	-	ns
Propagation Delay High to Low	t_{PHL}	Over Drive=100mV	-	190	-	ns
Output Signal Rising Time	t_{TLH}	Over Drive=100mV	-	10	-	ns
Output Signal Falling Time	t_{THL}	Over Drive=100mV	-	5	-	ns

■TIMING WAVEFORM

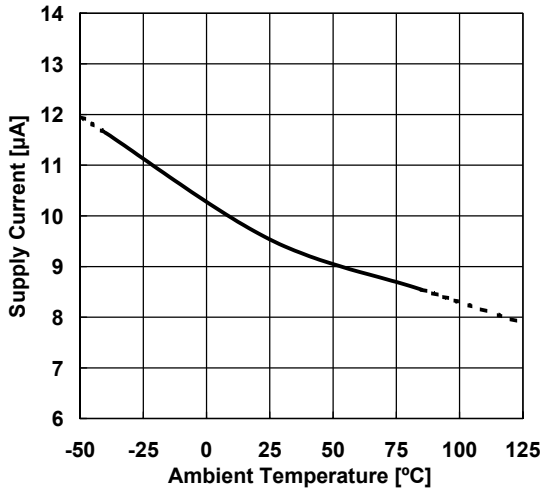


■TYPICAL CHARACTERISTICS

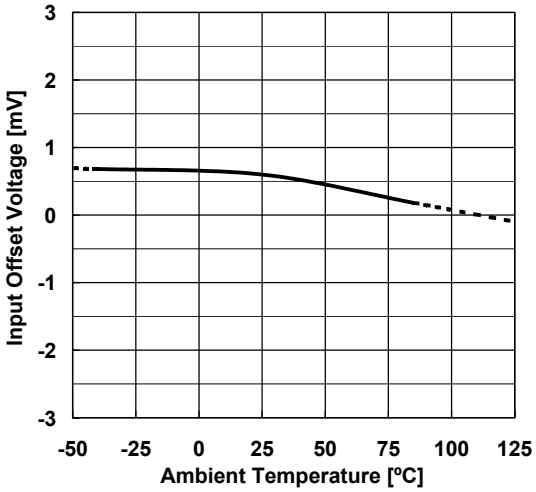
Supply Current vs. Supply Voltage
Ta=25ºC



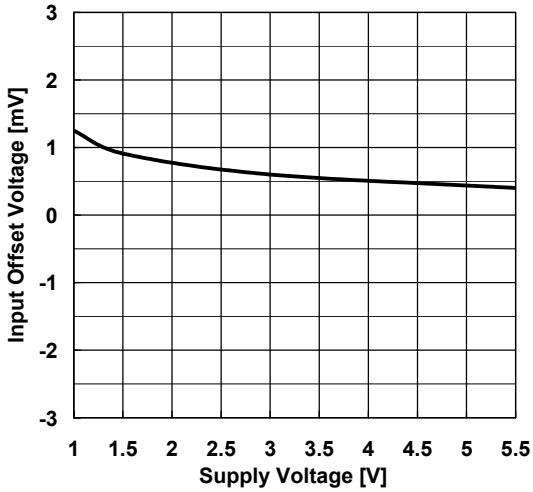
Supply Current vs. Temperature
V_{DD}=3.0V



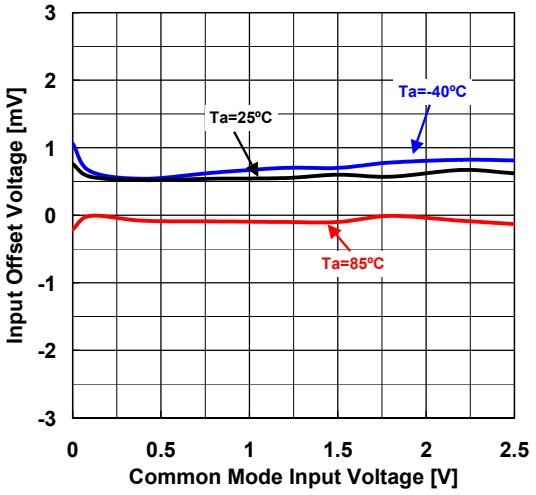
Input Offset Voltage vs. Temperature
V_{DD}=3.0V



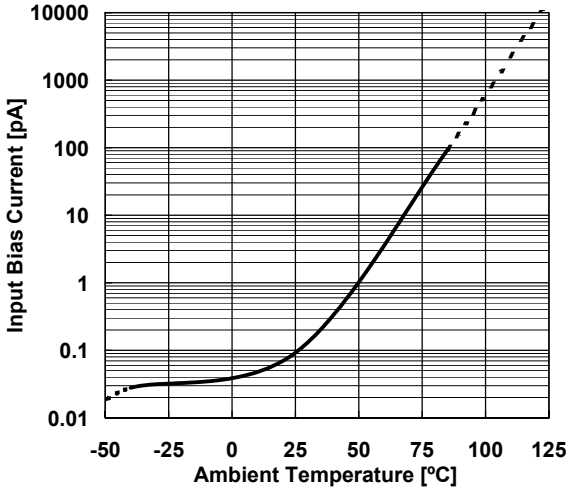
Input Offset Voltage vs. Supply Voltage
Ta=25ºC



Input Offset Voltage
vs. Common Mode Input Voltage
(Temperature)
V_{DD}=3.0V

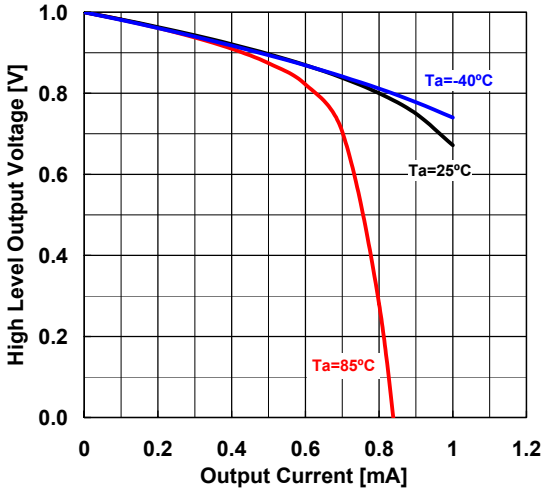


Input Bias Current vs. Temperature
V_{DD}=3.0V

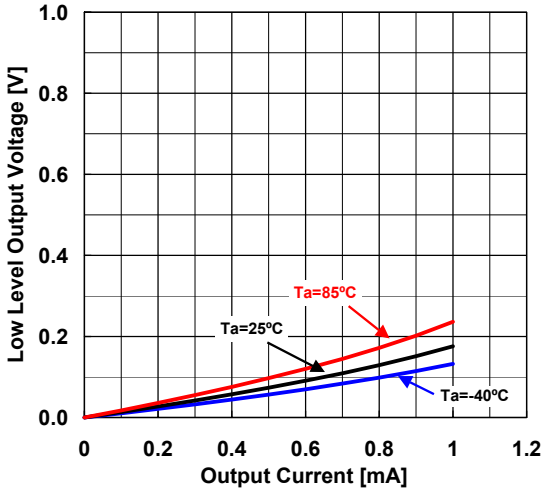


■TYPICAL CHARACTERISTICS

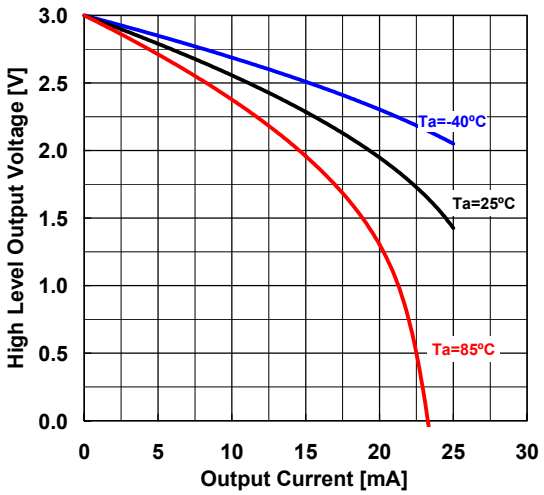
High Level Output Voltage vs. Output Current
(Temperature)
V_{DD}=1.0V



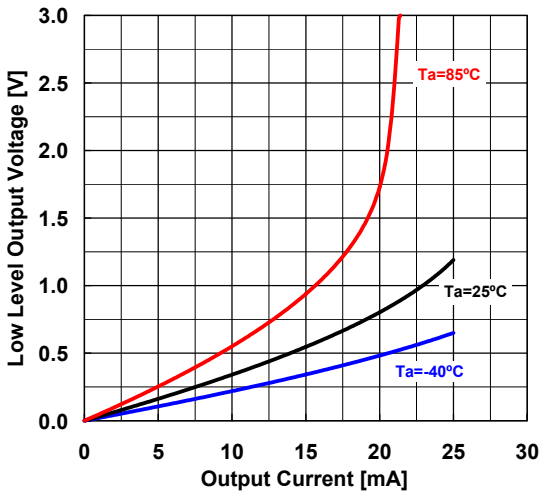
Low Level Output Voltage vs. Output Current
(Temperature)
V_{DD}=1.0V



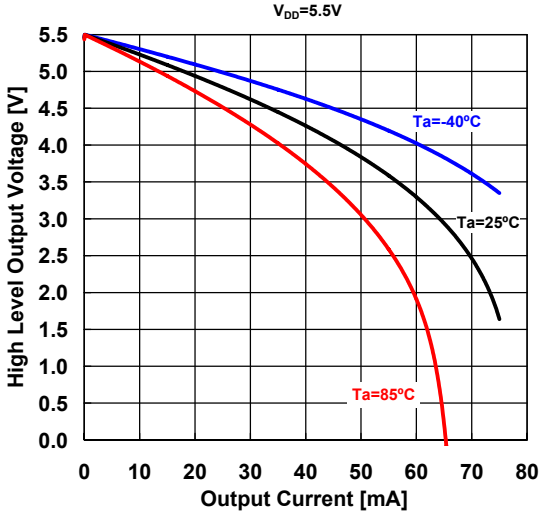
High Level Output Voltage vs. Output Current
(Temperature)
V_{DD}=3.0V



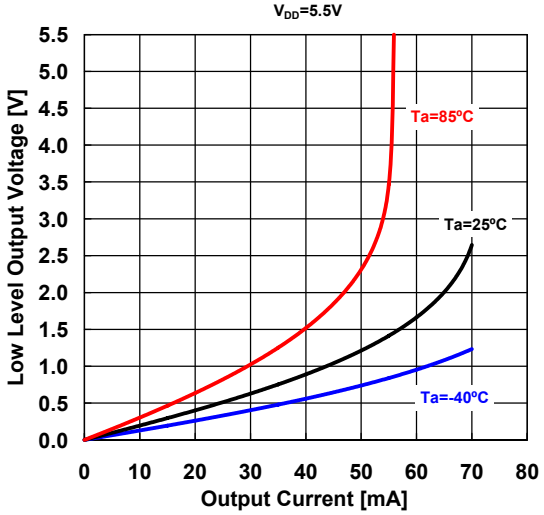
Low Level Output Voltage vs. Output Current
(Temperature)
V_{DD}=3.0V



High Level Output Voltage vs. Output Current
(Temperature)
V_{DD}=5.5V

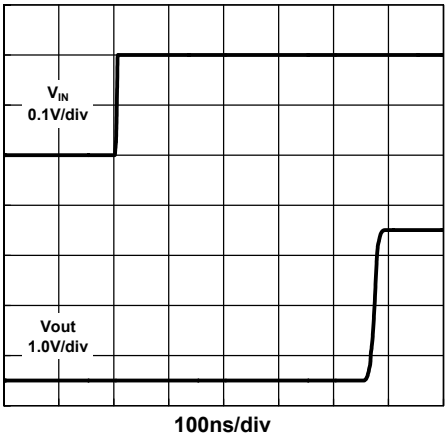


Low Level Output Voltage vs. Output Current
(Temperature)
V_{DD}=5.5V

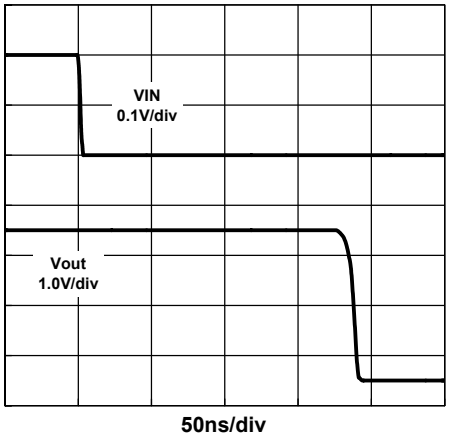


■TYPICAL CHARACTERISTICS

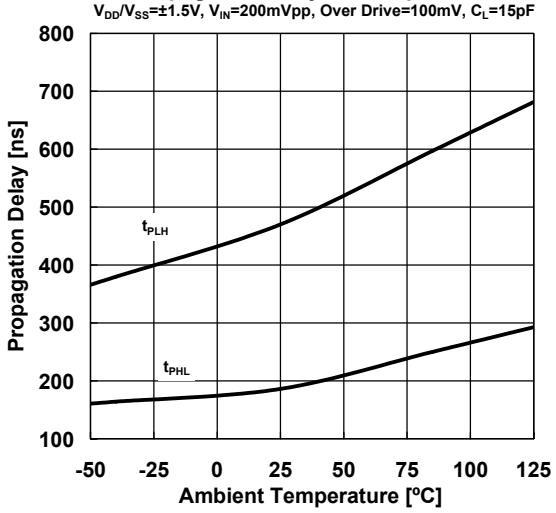
Propagation Delay t_{PLH}
V_{DD}/V_{SS}=±1.5V, Over Drive=100mV, C_L=15pF, Ta=25ºC



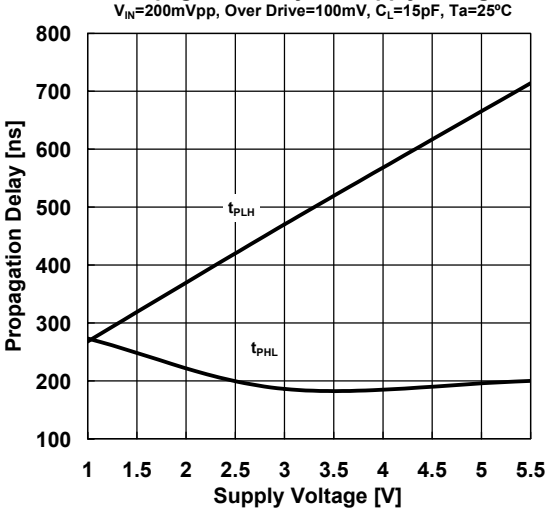
Propagation Delay t_{PHL}
V_{DD}/V_{SS}=±1.5V, Over Drive=100mV, C_L=15pF, Ta=25ºC



Propagation Delay vs. Temperature
V_{DD}/V_{SS}=±1.5V, V_{IN}=200mVpp, Over Drive=100mV, C_L=15pF

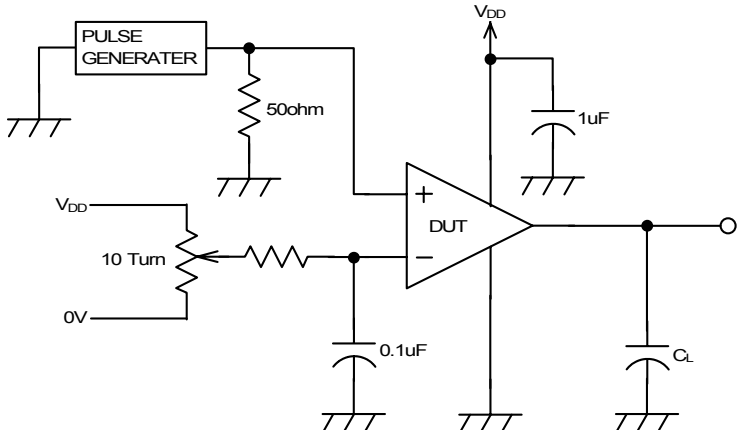


Propagation Delay vs. Supply Voltage
V_{IN}=200mVpp, Over Drive=100mV, C_L=15pF, Ta=25ºC



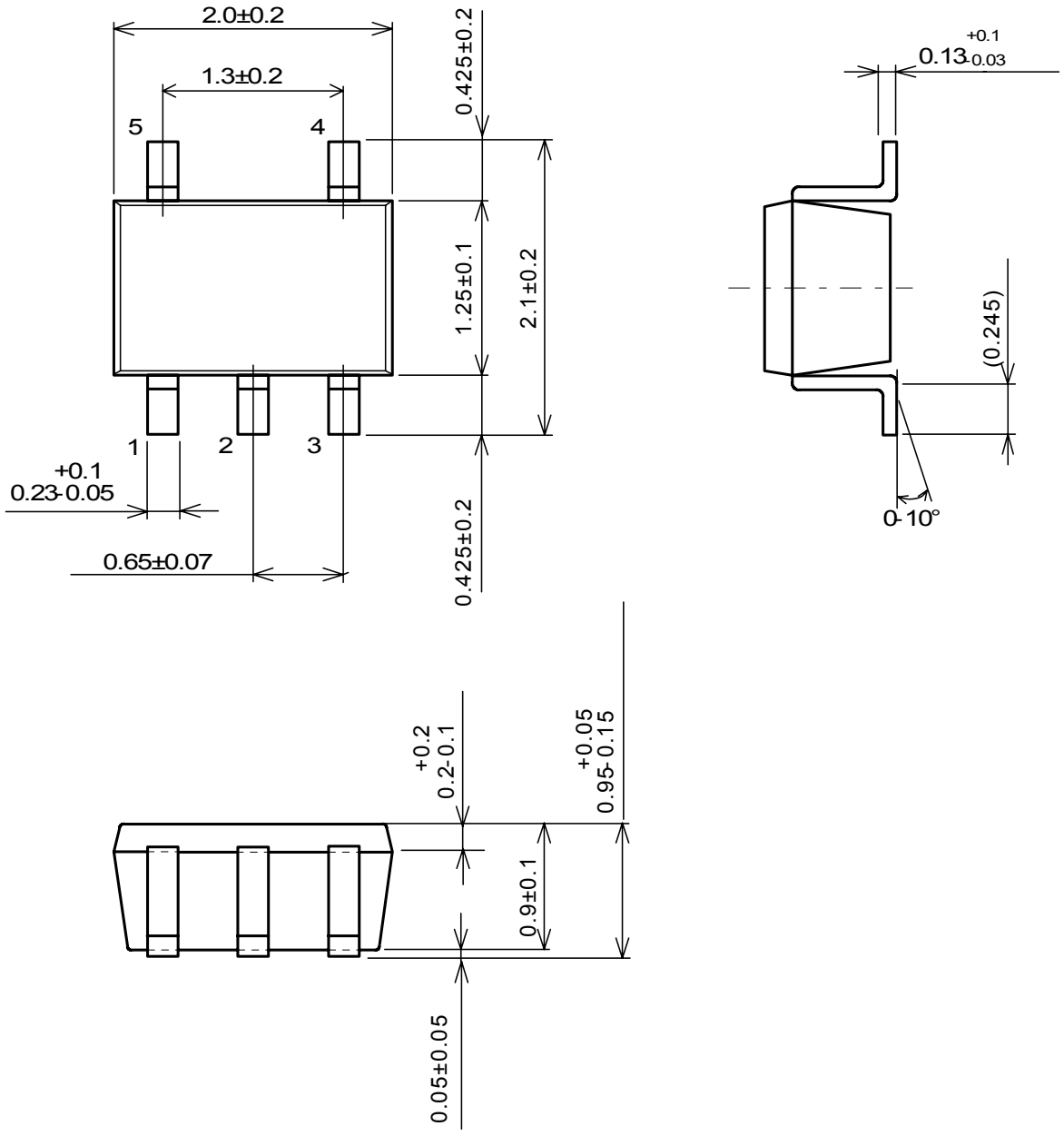
■TEST CIRCUIT

Switching Characteristics Measurement Circuit



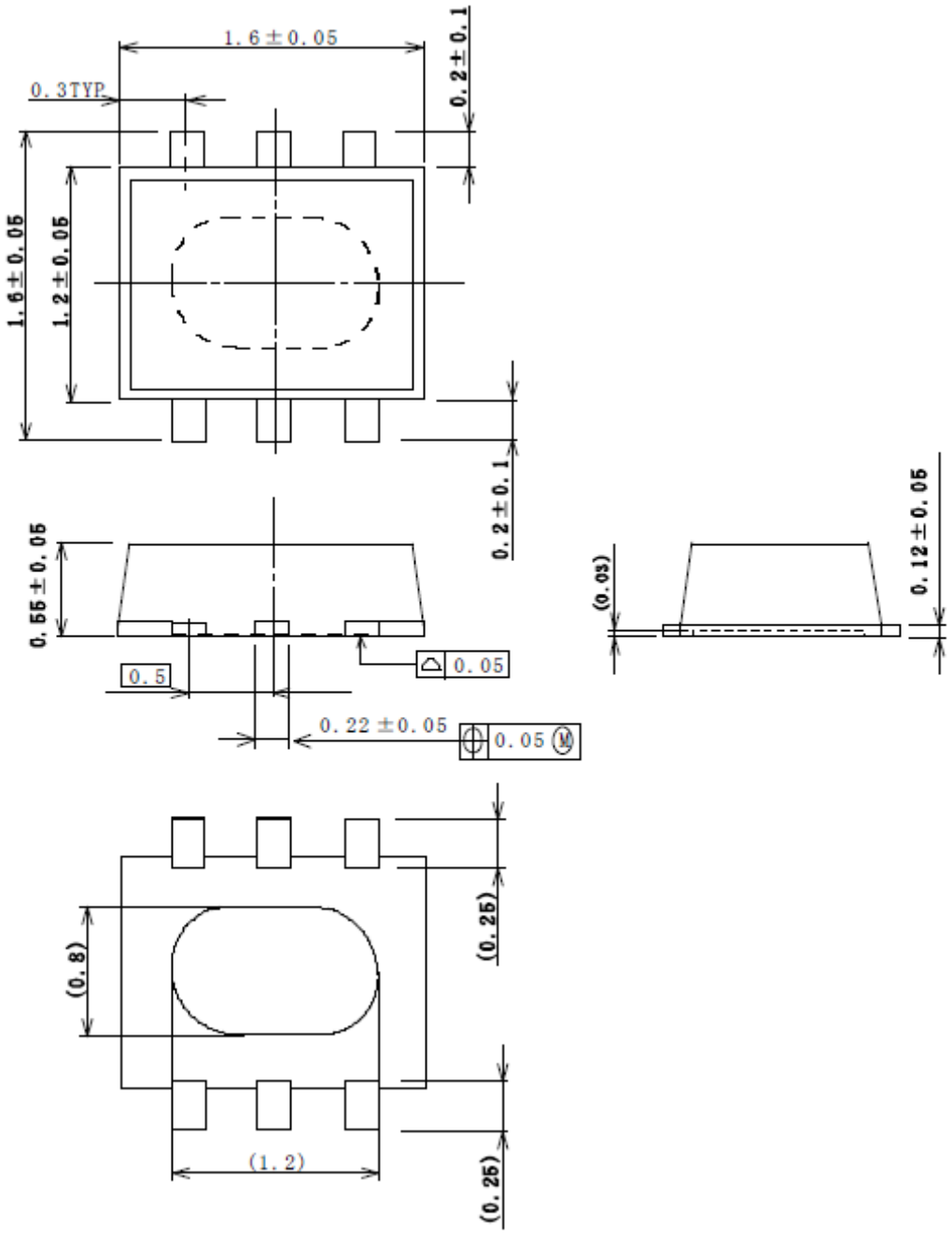
■PACKAGE DIMENSIONS

SC88A



■PACKAGE DIMENSIONS

TSON6



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